

REMARKS

Claims 1-53 are pending. By this Amendment, claims 54-56 are cancelled.

Applicant appreciates the courtesies extended to Applicant's representative by Examiner Mathews during the April 6 personal interview. Applicant's separate record of the substance of the personal interview is incorporated into the following remarks.

I. The Drawing Objection is in Error

The Office Action objected to the drawings under 37 C.F.R. §1.83(a) on the grounds that the embodiment including two focus position-detecting units must be shown, and that flowcharts should be provided relating to the method claims. This objection is respectfully traversed.

As discussed in the personal interview, the Office Action appears to refer to the first and second focus position-measuring units recited in independent claim 40. The two focus position-measuring units of claim 40 are shown in the drawings. For example: (1) the first focus position-measuring unit of claim 40 reads on the highly accurate detector structure shown in Fig. 7 and described at page 66, lines 11-17, page 67, lines 15-21 and in other parts of the specification describing the Fig. 7 structure; and (2) the second focus position-measuring unit of claim 40 reads on the detector shown in Figs. 9(a)-9(b) and described, for example, at page 63, line 12 - page 66, line 11. While these two detectors are described as part of AF sensors 44A and 44C, shown generally in Fig. 1, they are separate measuring units as described in the specification and as separately illustrated in Figs. 7 and 9(a)-9(b).

With respect to the claimed methods, as discussed in the personal interview, the claimed methods are clear from the description provided in the specification and from the apparatus drawings. No further flowcharts are required to understand the invention or to comply with PTO rules or procedures. For example, the claimed methods are not overly complicated, and involve methods (fully explained in the specification) of using the disclosed

(and illustrated) apparatus. Corresponding flowcharts likely would be redundant to the claims. Furthermore, as evidenced by, for example, U.S. Patent 5,510,892 to Mizutani et al. (cited during prosecution by the Examiner), flowcharts have not been required by the PTO in similar situations in this technology (see, for example, claims 20, 21, 26 and 27 of the 892 patent).

Accordingly, withdrawal of the drawing objections is requested.

II. All Pending Claims are Patentable

Applicant notes with appreciation the Office Action's indication that claims 18-24 and 40-47 are allowed, and the identification of allowable subject matter in claims 6-8, 13, 14, 30 and 31. Furthermore, claims 50 and 53, which are included in the 35 U.S.C. §102(b) rejection (to be discussed below), depend from claims 18 and 40, and therefore also should be indicated as allowed. Applicant respectfully submits that all pending claims are in condition for allowance.

Claims 1-5, 9-12, 15-17, 25-29, 32-35, 36-39 and 48-56 stand rejected under 35 U.S.C. §102(b) over JP-A-6-283403 (hereafter "Japan-403"). This rejection is respectfully traversed.

Regarding independent claim 1, as discussed in the personal interview, Japan-403 does not disclose the second step of "setting the positional relationship...on the basis of information about the measured height...and information about an inclination angle of a running surface of the substrate stage." For example, the running surface of the substrate stage may be the surface of a baseboard on which the substrate stage is moved, rather than a part of the substrate stage.

Japan-403 performs adjustments using the auto focus system and the auto leveling system based only on the "measured height" (emphasis added). Japan-403 does not use

information about an inclination angle of a substrate stage running surface to set the positional relationship.

Regarding independent claims 12 and 35, Japan-403 fails to disclose the steps or structure for "measuring at least one of a rolling amount of the substrate stage, a pitching amount of the substrate stage, and a displacement amount of the substrate stage in an optical axis direction of the optical system at a plurality of positions within a movement stroke of the substrate stage using a fiducial member having a good flatness arranged on the substrate stage, and storing a result of measurement" (emphasis added). The Office Action asserts that the fiducial member in Japan-403 is mirror 56. See the Office Action at, e.g., page 4, line 13. Fig. 20 of Japan-403 fails to teach or suggest "measuring at least one of a rolling amount..., a pitching amount, and a displacement amount of the substrate stage in an optical axis direction ... using a fiducial member." Fig 20 of Japan-403 shows measurement performed between the interferometer 57 and mirror 56 perpendicular to the optical axis AX1 direction and not along the optical axis direction as recited in claims 12 and 35.

In response to the Office Action's assertion on page 5, lines 7-15, that the Applicant has read a feature into the claim that is not present in the claim language, Applicant respectfully disagrees. As is generally known in the art, and consistent with the disclosed embodiments, rolling generally refers to rotating about a longitudinal axis without changing direction or changing height above a surface. Similarly, pitching refers to oscillating about a lateral axis. As such, disclosed embodiments of the invention may measure at least one of the rotation about a longitudinal axis, the pitching about a lateral axis and the displacement amount of the substrate stage in an optical axis direction of the optical system. As such, the claim language clearly defines the above features.

Regarding independent claim 25, Japan-403 fails to disclose "a focusing stage which conforms the surface of the substrate to the image plane of the optical system in the exposure

area of the optical system on the basis of a value measured by the focus position-measuring unit and information about an inclination angle of a running surface of the substrate stage" (emphasis added). As noted above with respect to claim 1, Japan-403 does not disclose using information about an inclination angle of a running surface of the substrate stage to conform the surface of the substrate to the optical system image plane.

The remaining claims are dependent claims and therefore are patentable for at least the reasons set forth above with respect to their corresponding independent claims.

III. Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



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Attachments:

Petition for Extension of Time
Request for Continued Examination

Date: April 12, 2004

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